

WHAT IS CLAIMED IS:

1. An image display having a plurality of thin film transistors and a plurality of capacitors on a substrate, wherein

a plurality of gate-lines and a plurality of signal-lines which cross said plurality of gate-lines in a matrix shape are formed on said substrate,

each of said thin film transistors has: an island-shaped semiconductor layer having a source region, a drain region, and a channel region sandwiched between them; a first insulation film formed between said island-shaped semiconductor layer and a gate electrode of the same layer as that of said gate-lines; an interlayer insulation film formed above said island-shaped semiconductor layer; and a source electrode and a drain electrode which are come into contact with said source region and said drain region via an opening formed in said interlayer insulation film and which exist in the same layer as that of the signal-lines, and

each of said capacitors has: a storage electrode of the same layer as that of said gate-lines; a second insulation film formed on said storage electrode so as to be in contact therewith; and an electrode which is formed on said second insulation film so as to be in contact therewith and which exists in the same layer as that of said signal-lines.

2. A display according to claim 1, wherein

20230626P0001

relative permittivity of said second insulation film is higher than that of said first insulation film, and an etching rate of said second insulation film is lower than that of said first insulation film.

3. A display according to claim 1, wherein said second insulation film is an oxide film of said storage electrode.

4. A display according to claim 1, wherein said second insulation film is formed in an upper portion and a side portion of said gate electrode.

5. A display according to claim 1, wherein said first insulation film and said second insulation film are made of a same high dielectric constant material.

6. A display according to claim 1, wherein said first insulation film is a laminate film of a silicon oxide film and a high dielectric constant film.

7. A display according to claim 1, wherein said capacitor is a parallel capacitor comprising:

a first capacitor constructed by said island-shaped semiconductor layer, said first insulation film, and said storage electrode; and

a second capacitor constructed by said storage electrode, said second insulation film which is formed on said storage electrode and whose relative permittivity is higher than that of said first insulation film, and said electrode which is directly formed on said second insulation film and which exists in the same layer as that of said signal-lines.

8. A display according to claim 1, wherein a frame memory constructed by a capacitor and a switch is formed on said substrate in order to temporarily store image data.

9. A display according to claim 8, wherein said frame memory is provided in a pixel.

10. A display according to claim 1, wherein said island-shaped semiconductor layer is an island-shaped polysilicon layer.

11. An image display having a plurality of thin film transistors and a plurality of capacitors on a substrate, wherein

a plurality of gate-lines and a plurality of signal-lines which cross said plurality of gate-lines in a matrix shape are formed on said substrate,

each of said thin film transistors has: an island-shaped semiconductor layer having a source region, a drain region, and a channel region sandwiched between them; a first insulation film formed between said island-shaped semiconductor layer and a gate electrode of the same layer as that of said gate-lines; an interlayer insulation film formed above said island-shaped semiconductor layer; and a source electrode and a drain electrode which are come into contact with said source region and said drain region via an opening formed in said interlayer insulation film and which exist in the same layer as that of the signal-lines, and

each of said capacitors has: a storage electrode of the same layer as that of said gate-lines; a second insulation film formed on said storage electrode and said interlayer insulation film so as to be in contact with them; and an electrode which is formed on said second insulation film so as to be in contact therewith and which exists in the same layer as that of said signal-lines.

12. A display according to claim 11, wherein relative permittivity of said second insulation film is higher than that of said first insulation film.

13. A display according to claim 11, wherein said second insulation film is an insulation film made of an organic material.

14. A manufacturing method of an image display, comprising the steps of:

forming a plurality of island-shaped semiconductor layers onto a substrate;

forming a first insulation film onto said island-shaped semiconductor layers;

forming a gate electrode and a storage electrode onto said first insulation film;

forming a source region, a drain region, and a channel region sandwiched between them onto said island-shaped semiconductor layers;

forming a second insulation film onto said storage electrode;

forming interlayer insulation films onto

2025 RELEASE UNDER E.O. 14176

regions above said gate electrode and said storage electrode;

simultaneously removing said interlayer insulation film of a contact hole portion and said interlayer insulation film above said storage electrode; and

simultaneously forming an electrode on said second insulation film and a source electrode and a drain electrode which are connected to said source region and said drain region.

15. A method according to claim 14, wherein said second insulation film is formed to an upper portion and a side portion of said gate electrode simultaneously with said step of forming the second insulation film onto said storage electrode.